

**METACAP®**



**Operating Instructions**

**METACAP Spray Gun D/A**

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# **1 General Information**

## **1.1 Introduction**

It is indispensable for the user of this METACAP Spray Gun D/A to carefully read the complete contents of this operating manual before using the spray gun to ensure a safe and correct operation. This operating manual includes important information concerning the safe and economical use of this spray gun.

Therefore, always keep this operating manual accessible!

Failure to observe the instructions of this operating manual will render the manufacturer free of any legal liabilities!

## **1.2 Scope of Supply of the METACAP Spray Gun D/A**

1 METACAP Spray Gun D/A	Item no. 101115
1 cleaning brush, short (see 9.1 Cleaning, page 9-19)	Item no. 30078
1 cleaning brush, long (see 9.1 Cleaning, page 9-19)	Item no. 30077
1 needle cleaning brush (see 9.1 Cleaning, page 9-19) (only for the AKKORD type)	Item no. 30083
1 mounting bolt for nozzle holder (see 9.2.4 (Dis-)Assembly of Nozzle Holder , page 9-24)	Item no. 30084

The above mentioned item numbers refer to the spare parts available by Metacap upon request.

## 2 Description of the METACAP Spray Gun D/A

The METACAP Spray Gun D/A was developed for the combined use with conveying equipment and circulation systems for coating materials and with METACAP bottom cup sets.

### 2.1 Technical Data

Hose couplings		Air supply 1/4" outside thread with plug-in nipple for quick connect coupling NW7, 2 equipped. Material supply 3/8" outside thread
Maximum pressure	working	Air supply PI 10bar max. Material pressure 8bar max.
Weight		680g without cup, Bottom cup set 0.5L - 305g Bottom cup set 1.0L - 370g
Accessories		Bottom cup sets for 0.5 and 1.0 L item no. 101115A and 101115B
Recommended pressure	air	3 – 6 bar for at least 300 L/min of efficient air supply The compressed air must be dry and oil-free. Minimum inner section of the feed pipe: 9mm
Material pressure		The material pressure depends on the coating material and can be adjusted on the paint delivery unit (maximum: 8 bar). When using bottom cup sets, the material pressure results from the spraying pressure.

### 2.2 Identification



Note:

The identification was effected according to DIN EN 1953 "Atomising and Spraying Equipment for Coating Materials– Safety Requirements", section 7.2 "Identification".

The serial number of the spray gun is recorded on the left side of the spray gun handle, the maximum air pressure and the maximum pressure for the coating material are indicated on the right side of the spray gun handle.

## **3 Use**

### **3.1 Intended Use**

The METACAP Spray Gun is exclusively intended for:

- the spraying of coating materials (paint, lacquer, stripping agent, oil, fatty matters and similar substances).
- the combined use with conveying equipment and circulation systems for coating materials and with METACAP Bottom Cup Sets.
- Use only conductive tubing. (more information see 5.1 Risk of Fire and Explosions)

### **3.2 Incorrect Use**

- Never point the spray beam and/or air jet at living things.  
There is a risk of injury.
- Never exceed the admissible working pressures of the coating device / of the spray gun.
- Use accessories or spare parts supplied or recommended by the manufacturer only.
- Before effecting any maintenance work or cleaning procedures, always switch off the air and the material supply. Actuate the spray gun to reduce the pressure of the coating device.
- Never use the METACAP Spray Gun D/A in combination with airless pumps or with pumps for air-supported airless.
- Do not atomize acids, caustic solutions, removers and similar substances.
- Do not use non-conductive tubing.

## **4 Warranty**

The warranty period for the METACAP Spray Gun D/A is 24 months. This period will start from the date of purchase.

It is not possible to make any warranty claims:

- regarding wear parts like gaskets, silencers, nozzles, needles or similar parts.
- if the user does not observe the instructions of this operating manual.
- if the user modifies the METACAP Spray Gun D/A without prior authorization of the manufacturer.
- if other than original spare parts are used.
- if the user tries to eliminate warranty deficiencies on his own without prior written consent of the manufacturer.

The manufacturer must be informed in writing about any warranty claims immediately after the occurrence of the deficiency. Then, the METACAP Spray Gun D/A will have to be sent to the manufacturer to check the warranty claim.

We are of course available for any maintenance or repair work which might become necessary.

METACAP reserve the right to carry out all modifications which might be required for an improved functioning of the METACAP Spray Gun D/A.

## 5 General Safety Instructions

### 5.1 Risk of Fire and Explosions



Caution!

Solvents and coating materials may represent a potential risk of fire and explosions.

- All dangerous zones must be equipped with an efficient ventilation or suction system to avoid a potentially dangerous accumulation of inflammable vapors.  
Please observe the respective rules for prevention of accidents "Processing of Coating Materials".
- Open fires and smoking are not allowed within the working areas for spraying and mixing.
- Appropriate fire extinction devices must be available within the working areas.
- When using spray guns or when working with coating materials in general, all legal and official instructions will have to be observed and all requirements of the employer's liability insurance associations regarding the protection against fire and explosions must be met.



Caution!

Solvents basing on halogenated hydrocarbon, like trichloroethane and methylene chloride 1,1,1, for example, may cause chemical reactions in combination with aluminum and galvanized or hot galvanized components and will therefore represent a potential risk of explosion.

Please carefully read all labels, safety data sheets and technical data sheets regarding the materials you want to use.

The METACAP Spray Gun D/A is originally not designed to be used with halogenated hydrocarbon. The manufacturer is, however, in the position to modify it accordingly on request. Moreover, the user has to ensure that all other components of the coating device are suitable for the above mentioned materials.

**Attention!**

Never use devices to spray materials containing solvents which are not authorized accordingly by their manufacturers.



#### Caution!

It is possible that static electricity may be produced during the spraying procedure.

In case of high flow rates, it might be possible that an electrostatic spark is generated by friction. This spark may then ignite certain types of solvents and coating materials. To avoid fire and explosions, a continuous grounding of the spray system and of the object to be sprayed should be ensured. Make also sure that the compressed air plant is grounded so that eventual charges can be discharged by the tubing. Use only conductive tubing (resistance  $> 10^3 \Omega/\text{m}$  and  $< 10^6 \Omega/\text{m}$  according to the German Employers' Liability Insurance Association guideline 132). Use our anti-static air hoses, e.g. 10m item no. 30051, or sold by the meter item no. 300531 as compressed air supply line. For spreaders METASET 2 – 10 L or bigger, use our conductive twin-hoses, e.g. 5m item no.30058 or for METASET 3 – 2 Liter our conductive twin-hoses for combination, e.g. 1.5m item no.30073.

## 5.2 Personal Protection



#### Toxic vapors:

When spraying coating materials, dangerous vapors or clouds (aerosols), which are detrimental to your health, can escape. Please carefully read all labels and safety instructions and observe all indicated instructions and recommendations.

In case of doubt, please ask the material supplier.

- Please use respiratory equipment when spraying. The respiratory equipment used must be suitable for the material in use and adapted to the degree of the gas concentration (when spraying paint, please use respiratory equipment independent of the ambient atmosphere or equipment with filter combination A1/A2-P2).
- Always wear safety goggles during all spraying and cleaning procedures.
- When using certain coating materials and solvents, it is indispensable to wear protective gloves during all spraying, cleaning or maintenance procedures.
- Ensure a sufficient protection of your skin during all spraying and cleaning procedures. Either wear appropriate protective clothes or use suitable protective skin ointments. We recommend expendable suits and/or our liquid gloves called METACLEAN or similar products.



### **5.3 Noise Level**

The continuous noise level within the highest performance range of these spray guns may exceed 85 db(A) depending on the adjusted supply air pressure and on the nozzle cap settings. The noise levels are measured by using impulse noise meters under normal operating conditions of the spray gun.

In case of a continuous noise level of more than 85 db(A), it is recommended to wear an appropriate ear protection (see the respective rules for prevention of accidents).

Please contact the manufacturer for more detailed information on the noise levels.

### **5.4 Instruction of the Personnel**

The personnel has to be made familiar with the correct use and with the necessary maintenance procedures regarding the METACAP Spray Gun D/A. The general instructions and the safety instructions of this operating manual as well as the operating instructions of the coating materials to be used should be thoroughly read and understood before using the spray gun.

## **6 Description, Structure and Functioning**

### **6.1 Description**

The METACAP Spray Gun is a low pressure device.

The spray material is atomized with low pressure while at the same time being encapsulated by a large volume of air; this air jacket presses the atomized spray material against the surface to be processed and prevents clouds of atomized spray material from escaping. This process is, however, only efficient within a distance of max. 20 cm for a wide spray beam and of approx. 30 cm for a circular spray beam. Please keep these distances during the spraying procedures and always guide the spray gun in such a way that the spray beam will vertically hit the surface. Otherwise, clouds of atomized spray material will escape.

The nozzle and needle are made of stainless special steel and therefore ensure a high durability. Both components are appropriate for various coating materials.

This spray gun is equipped with the standard METACAP-AKKORD nozzle set. This nozzle set is continuously adjustable according to nozzle sizes between 0.5 and 3.6 mm. Thus, different coating materials can be processed using only one nozzle set avoiding the annoying nozzle change and the purchase of further nozzle sets. Furthermore, the AKKORD needle is a pipe through which an additional atomizing airflow is brought to the coating material to improve the spraying process.

Apart from the AKKORD nozzle set and nozzle cap, also nozzle sets with fixed nozzle diameters and standard nozzle caps can be installed in the spray gun.

For special applications, there are of course nozzle sets with fixed diameters available upon request.



#### **Important note:**

The standard type of this spray gun can only be used to a certain degree in case of highly corrosive or abrasive coating materials.

If the spray gun is charged with such materials, an increased need of maintenance and cleaning and of spare parts will be the consequence.

If you are in doubt concerning the possible use of any kind of material with this spray gun, please contact the manufacturer and exactly indicate the material to be used and/or send us a sample.

Special designs concerning the whole material guiding system made of special steel are of course possible. A list of the materials used for the manufacturing of this spray gun is available upon request.

If necessary, please also check the other components of your coating device, if they are suitable for the above mentioned coating materials.

## 6.2 Structure of the METACAP Spray Gun D/A

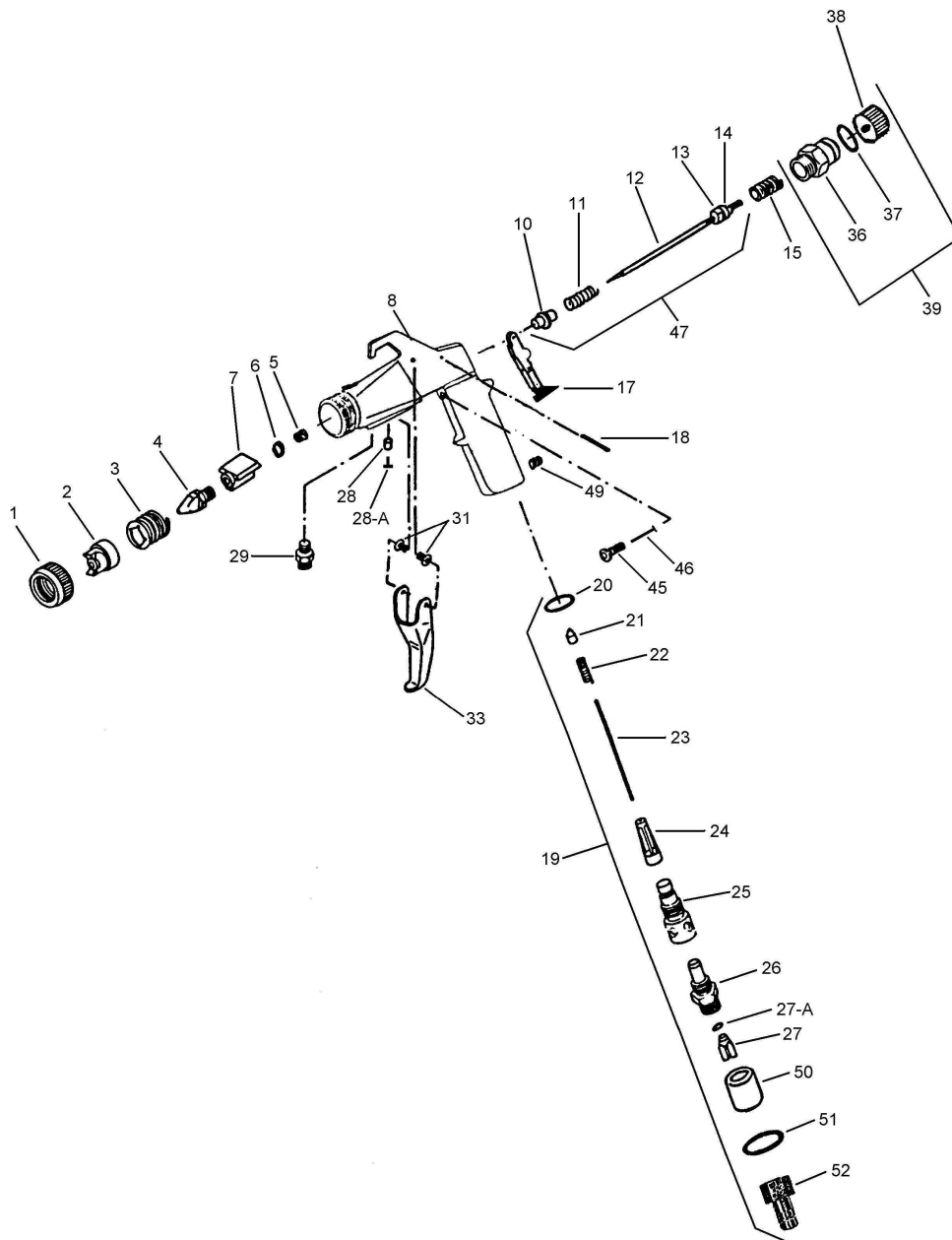


Figure 1: Structure of the METACAP Spray Gun D/A

### 6.3 Spare Parts List for the METACAP Spray Gun D/A

Pos.	Item No.	Designation	Quantity
1	10266	Nozzle cap adjusting ring	1
2	10252	AKKORD nozzle cap	1
3	10265	Nozzle cap diaphragm, complete	1
4	10251	AKKORD nozzle	1
5	10224	Blocking screw	1
6	10221	Sealing ring	1
7	10218	Nozzle holder	1
8	10211	Gun body	1
10	10248	Needle guide ring	1
11	10247	Guiding spring	1
12	10249	AKKORD needle	1
13	10245	AKKORD needle adjusting screw	1
14	102138	Counternut	1
15	10261	Pressure spring	1
17	10213	Control device	1
18	10212	Articulated axle	1
19	10281	Venturi air converter, complete	1
20	10279	Annular gasket for air converter	1
21	10273	Valve block	1
22	10272	Valve spring	1
23	10270	Valve needle	1
24	10269	Valve support	1
25	10267	Basic body of venturi air converter	1
26	10268	Air supply nozzle	1
27	10271	Valve underpart	1
27-A	10277	O-ring for valve underpart	1
28	10228	Air hose pipe connection piece Inner Thread M4	1
28-A	10231	Screw plug for 10228 DIN 84 M4x6 VA	1
29	10230	Thread connection piece for paint 3/8"	1
31	10238	Fastening screw for trigger handle	2
33	10236	Trigger handle	1
36	102137	Pressure spring sleeve	1
37	1021391	O-ring for the material fine adjustment device PTFE	1
38	102136	Knurled nut	1
39	102135	Material fine adjustment device, complete	1
45	10214	Pressure guide screw	1
46	10215	Guide pin	1
47	10250	AKKORD needle, complete	1
49	10282	Locking screw for air converter	1
50	10274	silencer ring	1
51	10276	O-ring for silencer ring	1
52	30031	Plug-in nipple for quick connect coupling 1/4" Inner Thread	1

## 6.4 Functioning



Note:

The position numbers refer to figure 1, see chapter 6.2 Structure of the METACAP Spray Gun D/A, page 6-11.

The METACAP Spray Gun D/A generates the necessary low pressure and the required high air volume from the compressed air produced by the compressor and from the ambient air.

The air supply nozzle (1/26) supplies the compressed air into the spray gun, where it is reduced to approx. 0.3 bar to considerably increase the compressor-driven air volume with a Venturi nozzle (Bernoulli system), which is located within the Venturi air converter body (1/25) to take in the ambient air via suction holes. This air now flows through the completely hollow interior space of the spray gun body (1/8) up to the nozzle cap (1/2), where, depending on the respective adjustment of the nozzle cap with regard to the nozzle (1/4), the actual spraying pressure (approx. 0.3 - 0.5 bar) is built up which ensures the spraying of the coating material.

When using bottom cup sets, a part of this air volume will be pressed into the cupcup via the air tube connection piece (1/28) and ensures the paint transport to the nozzle.

It is also possible to operate these spray guns using turbines. For such an operation, it is necessary to dismount the air converter (1/19), which prepares the compressed air for low pressure according to the process described above, and to replace it by corresponding blower adapters (available upon request).

The coating material is transported via the thread connection piece for paint (1/29) into the nozzle holder (1/7) and then reaches the nozzle (1/4), which adds the coating material to the atomizing airflow. The AKKORD needle (1/12) opens and closes the nozzle.

The generated coating material cloud will be encapsulated by an outside air jacket, which is produced by the special geometry of the nozzle and of the nozzle cap, and will then be guided to the work piece. Thus, this system is able to considerably reduce clouds of atomized spray material from escaping.

## 7 Initial Operation



Note:

The position numbers refer to the figure 1, see chapter 6.2 Structure of the METACAP Spray Gun D/A, page 6-11.

Important note:

To ensure that no residual matters have a negative effect on the spray results, use an appropriate solvent to thoroughly rinse the METACAP Spray Gun D/A before initial operation.

### **Attention!**

Before using the METACAP Spray Gun D/A for the first time, carefully and thoroughly read the complete content of this operating manual to avoid possible dangers and damages caused by an incorrect use of your spray gun.

The same applies to new staff members who have to work for the first time with a METACAP Spray Gun D/A that has already been in use.

Since the handling and operation of the METACAP Spray Gun D/A are different compared to other spray gun types, it is recommended to practice the manipulation and adjustment of this spray gun using water before using any coating materials.

The same applies to new staff members who have to work for the first time with a METACAP Spray Gun D/A that has already been in use.

- Ensure the air supply by mounting the quick connect coupling NW 7,2 of your compressed air tube on the plug-in nipple (1/52) of your spray gun until it locks and latches audibly and perceptibly. If you are not sure, pull the air hose to check the firm connection.
- Establish the coating material supply by connecting your material tube with a union nut (3/8") and the threaded connection piece for paint (1/29), then use an appropriate wrench to tighten the nut.



If you are using bottom cup sets, please install these cups according to the corresponding mounting instructions belonging to the scope of supply of your cup set.

## 8 Operating Instructions



Note:

The position numbers refer to the figure 1, see chapter 6.2 Structure of the METACAP Spray Gun D/A, page 6-11.

- Mix, condition and filter the coating material to be sprayed according to the instructions of the manufacturer.
- Fill the material container with the coating material taking into account the maximum filling height indicated by the manufacturer.  
The maximum filling height for the bottom cups is approx. 10 mm below the cup shoulder.

### 8.1 Default Settings

1. Turn the knurled screw (1/38) carefully clockwise to the limit stop to close the paint supply. Please be careful, if you use too much force, you may damage the AKKORD needle (1/12) and the nozzle (1/4).
2. Tighten the nozzle cap (1/2) by means of the nozzle cap adjusting ring (1/1) and then loosen the connection by a half up to a full turn.  
The horns of the nozzle cap should be in a horizontal position.
3. Set the compressed air and material hose pipes under pressure. Closely watch all pipes and connections and pay attention to potential leaks.

#### **Attention!**

When using cup sets, it is not required to set the material supply under pressure. This will be effected automatically by starting the spraying process by means of the spraying pressure let off by the spray gun. When the spray process is finished, the cup will de-aerate automatically via the air supply hose pipes.

The material pressure streams out of spray gun and is also de-aerated here, so hold the spray gun in a vertical and steady position. In cases where this is not possible, hold the trigger handle (1/33) at action point to ensure a continuous initial air input.

The air supply pipes are under pressure and a material return flow into the spray gun is therefore not possible.

Do not put down, knock over or shake spray guns with filled cups, otherwise coating materials or solvents may be transported into the spray gun via the air supply hose pipes.

4. Now, carry out a trial spray operation. Take a piece of cardboard, of sheet metal or the like.
  - Keep the spray gun in a vertical position with a distance of approx. 20 cm to the work piece surface and pull the trigger handle (1/33) until the limit stop. In this state, there should not be any visible coating material since the AKKORD needle is still not able to lift off the nozzle due to the tightened knurled screw (1/38). Now, turn the knurled screw counterclockwise in a careful and gradual manner and thus open the material supply.

- Turn the screw as long as the required coating material quantity becomes visible.
- 5. Now move the spray gun to and fro in front of the work piece and ensure a vertical spray beam, if possible (see figure 2).

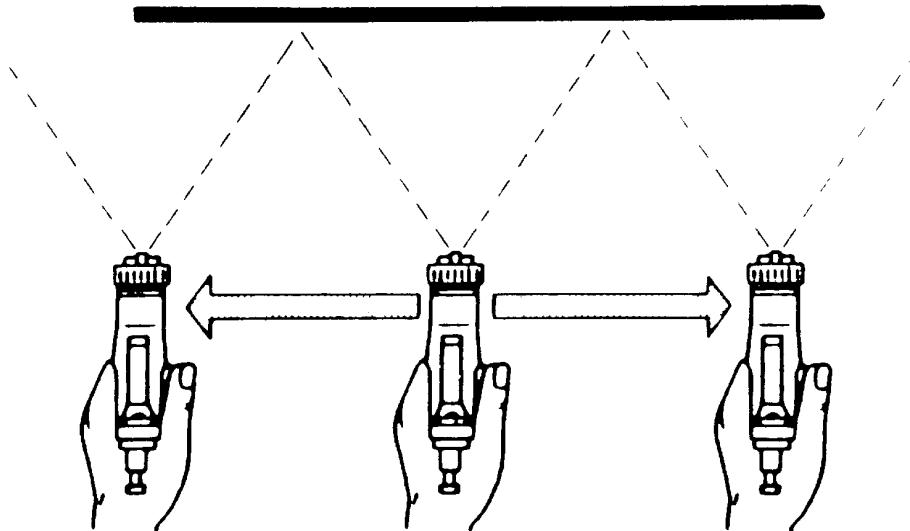


Figure 2: Guiding of the METACAP Spray Gun D/A

**Attention!**

Intensive waving will cause the air jacket will become unstable, allowing clouds of atomized spray material to escape.

- 6. Now, adjust the required spray beam, as described below:
  - Necessary adjustments to modify the spray beam
    - The shape (circular or wide) of the spray beam will be directly adjusted on the nozzle cap (1/2). The nozzle cap is spring-mounted and engages automatically in the corresponding positions.
    - To adjust the shape of the spray beam, engage the nozzle cap in the required position by means of the horns.
    - The horns are horizontal to the gun axis: vertical wide spray beam.
    - The horns are vertical to the gun axis: horizontal wide spray beam.
    - The horns are transversal to the gun axis: circular spray beam.

See figure 3.



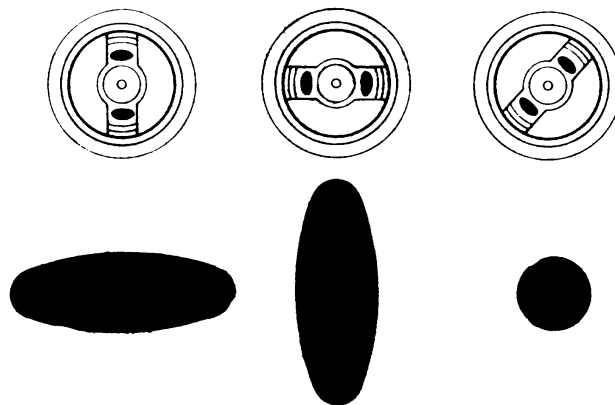


Figure 3: Spray Beam Shape Adjustment

7. Adjust the width of the spray beam by using the nozzle cap adjusting ring (1/1) to modify the distance between the nozzle cap (1/2) and the nozzle (1/4).
  - turn clockwise — wide spray beam
  - turn counterclockwise — narrow spray beam

**Attention!**

Never tighten the nozzle cap adjusting ring too firmly.

If you tighten the nozzle cap adjusting ring too firmly, the nozzle cap is directly positioned on the nozzle. Thus, the atomizing airflow is blocked and the horn air becomes so strong that the air jacket cannot be produced.

The consequence will be a sputtering spray gun producing unwanted clouds, see figure 4.

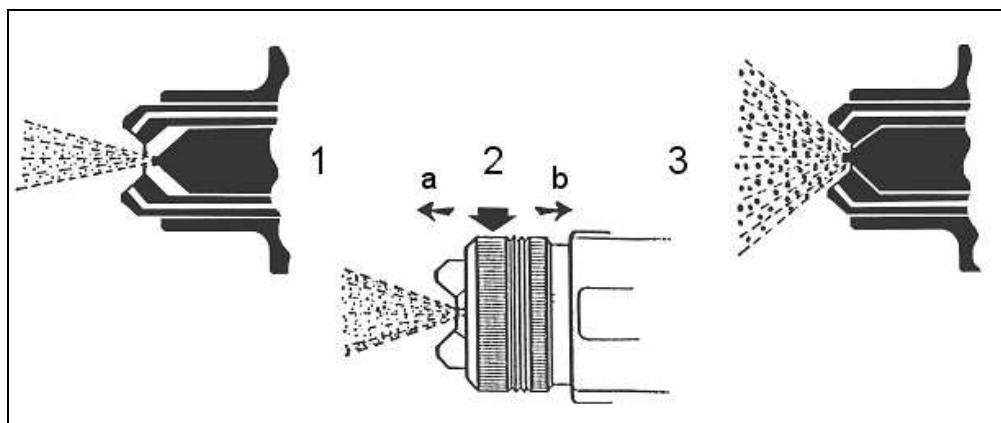


Figure 4: Adjustment of the Spray Beam Width

Description of the position according to figure 4:

- |    |                                    |    |                                   |
|----|------------------------------------|----|-----------------------------------|
| 1  | narrow spray beam: larger droplets | 3  | wide spray beam: smaller droplets |
| 2a | spray beam, narrow                 | 2b | spray beam, wide                  |

An infinite number of variants are possible between the indicated settings 1, 2, and 3.

The quantity of coating material coming out of the spray gun can be adjusted by turning the knurled screw (1/38).

- counterclockwise: more material
- clockwise: less material

**Attention!**

Please, take into account that you always adjust the material quantity simultaneously when modifying the width or shape of the spray beam.

Always adjust the spray beam only as wide as required to avoid a nuisance or possible danger caused by coating material splashes.

Depending on the coating material used, spray beam widths of about 5 mm up to 200 mm are adjustable.

## 8.2 Spray Process

The required spray beam has been correctly adjusted by spraying a test object. This process might not be necessary in case of trained operators. Such experienced users may adjust the spray beam directly on the work piece.

- Always keep the spray gun vertical to the work piece surface. If you move or incline the spray gun in a bow shaped way, the coating material will be irregularly applied. The spraying distance should not exceed approx. 200 mm.
- Spray all edges first. Let approx. 50% of each applied spray beam overlap. Actuate the trigger handle (1/33) only shortly before reaching the edge of the surface to be sprayed. Move your spray gun with continuous velocity over the surface and then release the trigger handle. Repeat all these steps for the application of the following spray beam in the counter direction.

**Attention!**

If there are any holes, grids, or the like within the work piece, place a plate behind these orifices allowing the air jacket to build up for catching misled coating material overspray.

Avoid an unintentional spraying of coating material by switching off the air and material pressure and by releasing the residual pressure when the spray gun is not used.

## 9 Maintenance and Care

### 9.1 Cleaning



Note:

The position numbers refer to the figure 1, see chapter 6.2 Structure of the METACAP Spray Gun D/A, page 6-11.

1. Switch off the air and material supply and release the residual pressure.
2. Remove the residual coating material from the conveyor according to the instructions of the manufacturer. Refill the coating material residues into the container or evacuate them professionally.
3. Clean the conveyor according to the instructions of the manufacturer.
  - When using METACAP Bottom Cup Sets, clean the cup (acc. to the structural drawing of the bottom cup sets 1/78 and 1//81) by means of a brush. Dismount the gasket sheet (see structural drawing of bottom cup set 1/77) by pulling it out of the holding device (see structural drawing of bottom cup set 1/79). Clean both the gasket sheet and the holding device by means of a brush.
  - Fill in the corresponding solvent (filling height: half-full).
4. Adjust the nozzle cap (1/2) to circular spray beam, then use the nozzle cap adjusting ring to tighten it, so that there is no remaining annular gap between the nozzle cap and the nozzle.
5. Now spray with the solvent suitable for the coating material to be used. Never spray directly in the ambient area, because this will cause needless dangers through the release of solvents.
  - Always use the METACAP SRG spray gun cleaning device or the injection orifice of a spray gun cleaning device. Repeat this procedure until the spray gun is clean. The number of the rinsing cycles depends on the coating material and on the corresponding type of solvent.
6. Switch off the air and material supply and release the residual pressure.
7. Now, clean the outside of the spray gun by means of a cleaning cloth, if necessary.

8. Unscrew the nozzle cap adjusting ring and remove the nozzle cap (1/2) and the nozzle cap diaphragm (1/3) from the spray gun. Clean these component parts by means of an appropriate solvent. If the drilled holes of the nozzle cap are clogged, clean them by means of a tooth pick. Do not use a wire, a drill or similar objects which may damage the nozzle cap. Such damages may lead to incorrect spraying results.
  - Now, the spray gun is clean enough to start working with a new coating material.
  - If the work is interrupted for a longer period of time (e.g. at the end of the working shift), the following operations will have to be carried out:
    - Unscrew the knurled screw (1/38) counterclockwise and remove it.
    - Unscrew the pressure spring sleeve (1/36) counterclockwise and remove it.
9. Pull the complete AKKORD needle (1/47) carefully backwards out of the spray gun. Push the AKKORD needle guide ring and guiding spring (1/10 and 1/11) forward down from the AKKORD needle. Do not loosen the adjustment screw of the AKKORD needle (1/13) and the counternut (1/14), as they ensure the initial air input settings of the spray gun which should not be altered.
  - Clean the outside of the AKKORD needle with a solvent and the inner part of the flare needle by means of the brass wire brush belonging to the scope of supply of your spray gun. Push this brush completely through the needle before you pull it back, otherwise the brass wires will wedge with the needle and it will not be possible any longer to remove the brush without damaging the flare needle.
10. Remount the AKKORD needle guide ring and the guiding spring on the AKKORD needle.
  - Slightly lubricate a length of approx. 10 mm of the AKKORD needle situated approx. 30 cm behind the tip by means of a non-corrosive, non-hardening lubricant (for example: Molycote LongTerm W2 or Vaseline) and then put it aside.
11. Unscrew the nozzle (1/4) counterclockwise by means of a deep offset wrench, a wrench or a nut (wrench size: 13 mm) and remove it from the nozzle holder (1/7). Do not use an open-jawed wrench or tongs for mounting or dismounting the nozzle, because these types of tools may damage the nozzle or the spray gun body. It is possible that such damages completely destroy the spray gun. If there are still coating material residues within the nozzle, clean the nozzle by means of a solvent. To clean the inside, use the short cleaning brush belonging to the scope of supply of your spray gun. Afterwards, clean the nozzle and put it aside as well.

12. Clean the inner part of the nozzle holder using the same short cleaning brush. In order to clean the AKKORD needle passage within the nozzle holder, please use the long cleaning brush (bottle brush) which also belongs to the scope of supply of your spray gun. Immerse the brush in the solvent, introduce it into the AKKORD needle passage and move the brush to and fro until the passage is clean. Take utmost care not to damage the sealing ring (1/6).
13. Reassemble the spray gun in reverse order and lubricate the thread of the nozzle cap adjusting ring, the thread of the pressure spring sleeve and of the pressure spring (1/15) within the sleeve with the same lubricant you have used for the AKKORD needle. Lubricate both the inside of the knurled screw and the threaded stem and do not screw it on the pressure spring sleeve before the sleeve has been mounted on the spray gun. Otherwise, the AKKORD needle could be damaged.
14. A further disassembly of the spray gun is usually not required.

**Attention!**

If the cleaning procedure is effected by means of a spray gun cleaning facility, dismount the air converter first, as there are O-rings (1/20 and 1/51) which cannot indefinitely be exposed to solvents.

To dismount the air converter, loosen the locking screw for the air converter (1/49) first by means of a 4mm hexagon socket screw key.

Then, take a 17 mm open-jawed wrench to turn counterclockwise and to remove the air converter at the air supply nozzle (1/26). Afterwards, clean the spray gun in the cleaning facility.

## 9.2 Maintenance and Repair



Note:

The position numbers refer to the figure 1, see chapter 6.2 Structure of the METACAP Spray Gun D/A, page 6-11.

### 9.2.1 Safety Instructions

- The staff members in charge of the repair/maintenance work are obliged to carefully read and observe all the instructions indicated in this operating manual.
- All maintenance or repair work will have to be carried out only after having depressurized and cleaned the spray gun. Otherwise, serious damages to the health of the service personnel or to the spray gun itself may occur.

### 9.2.2 Check/Replacement of Silencer Ring

- Remove the O-ring for the silencer ring (1/51).
- Pull the silencer ring (1/50) off the air converter (1/19).
- Place the silencer ring on your flat hand and blow into it; if you determine a considerable resistance or if no air at all will go through, the silencer ring cannot be used any longer and will have to be replaced.
- Put the checked or new silencer ring on the air converter.
- Install the O-ring for the silencer ring on the air converter and lock it within the groove.

### 9.2.3 Replacement of Nozzle & AKKORD Needle, Adjustment of Initial Air Input Settings

1. Disassembly of the existing nozzle set
  - Loosen the material fine adjustment device (1/39) by means of an open-jawed wrench (jaw size: 22 mm) and remove it.
  - Remove the AKKORD needle (1/47) carefully and take care not to spoil it by bending.
  - Remove the nozzle cap adjusting ring (1/1).
  - Take the nozzle cap (1/2) and the nozzle cap diaphragm (1/3) out of the spray gun.
  - Unscrew the nozzle (1/4) counterclockwise by means of a deep offset wrench, a wrench or a nut (wrench size: 13 mm) and remove it from the nozzle holder (1/7).

Do not use an open-jawed wrench or tongs for mounting or dismounting the nozzle, because these types of tools may damage the nozzle or the spray gun body. It is possible that such damages completely destroy the spray gun.

## 2. Installation of the new nozzle set

- Slightly lubricate a length of 10 mm of the AKKORD needle situated approx. 30 mm behind the tip by means of a non-corrosive, non-hardening lubricant (for example: Molycote LongTerm W2 or Vaseline).
- Insert the AKKORD needle in the spray gun from the rear side and move it backwards and forwards several times to ensure a sufficient distribution of the lubricant for an optimum lubrication.
- Screw in the new nozzle in the front part of the nozzle holder and fasten it fingertight by means of the appropriate wrench. If you fasten the nozzle too tight, the sealing surface of the nozzle holder can be damaged.
- Install the nozzle cap diaphragm and the nozzle cap into the spray gun body from the front side. A journal is situated at the edge of the nozzle cap diaphragm to be introduced into the corresponding groove of the spray gun body.
- Screw on the nozzle cap adjusting ring (slightly lubricate the thread). Make sure that the journal is correctly seated within the groove to prevent it from shearing off when tightening the nozzle cap adjusting ring, because then the nozzle cap diaphragm will rotate as well and a spray beam shape adjustment will no longer be possible.

## 3. Adjust the initial air input.

- Place the spray gun with the end of the AKKORD needle on a surface and push it down as long as the flare needle is completely seated within the nozzle.
- Pull the trigger handle (1/33) until a resistance becomes perceptible. Ensure that the AKKORD needle keeps the nozzle closed, the empty run (initial air input) of the trigger handle should be approx. 4 - 5 mm between the upper edge of the handle surface and the spray gun body. Please check the correct distance by means of a 4 or 5 mm screw or by using the appropriate round bars.
- Adjust the empty run by means of the AKKORD needle adjusting screw (1/13). If you turn this screw clockwise, the empty run is reduced and by turning it counterclockwise, the empty run will be increased. When the correct empty run has been adjusted, the AKKORD needle adjusting screw will be fixed by the counternut (1/14) to avoid an unintentional alteration of the empty run.
- Remount the material fine adjustment device (1/39) with the pressure spring into the spray gun body. Fasten those components fingertight only.



#### **9.2.4 (Dis-)Assembly of Nozzle Holder , Replacement of Sealing Ring**

1. Remove the nozzle set according to the instructions indicated in chapter 9.2.3 Replacement of Nozzle & AKKORD Needle, Adjustment of Initial Air Input Settings , page 9-22.
2. Screw the mounting bolt, belonging to the scope of supply of your spray gun, in the nozzle thread of the nozzle holder (1/7).
3. Clamp the other end of the mounting bolt into a vise, so that the thread connection piece for paint (1/29) is on top.
4. Loosen the thread connection piece for paint by means of a 17 mm-wrench and remove it. Do not use an open-jawed wrench, since the thread connection piece is only glued on and the force exerted by such a wrench will be too high. The hexagon nut of the thread connection piece for paint could be damaged, and if the wrench slips off, the air hose connection piece (1/28) may break off.
5. Pull the spray gun body off the nozzle holder to the rear side. If this does not work well, slightly hit on the front edge of the spray gun body by means of a plastic tip hammer to work loose the spray gun body for an easy removal from the nozzle holder. Do not use a fitter's hammer, you might damage the spray gun body thread!
6. Unscrew the nozzle holder from the mounting bolt.
7. Unscrew the blocking screw (1/5) on the rear side of the nozzle holder by means of an appropriate screw driver.
8. Remove the old sealing ring (1/6) from the nozzle holder.
9. Clean the drill hole by means of the long cleaning brush and remove all paint residues and impurities.
10. Clean the blocking screw and remove all residues and impurities.
11. Take the AKKORD needle and push the blocking screw on the AKKORD needle from the front side with the slotted end first.
12. Carefully mount the new sealing ring on the AKKORD needle with the closed side first.
13. Insert the accordingly equipped AKKORD needle into the nozzle holder from the rear side and push the sealing ring and the blocking screw into the drill hole as far as possible to be able to fasten the blocking screw.
14. Screw in the blocking screw by hand until the limit stop and pull out the AKKORD needle.
15. Tighten the blocking screw by means of the screw driver.



16. Remount the nozzle holder in reverse order. Ensure that the thread connection piece for paint is glued in by means of an appropriate thread safety glue. If it is not glued in, coating material might flow out of the thread.
- Reassemble the nozzle set according to the instructions indicated in chapter 9.2.3 Replacement of Nozzle & AKKORD Needle, Adjustment of Initial Air Input Settings , page 9-22.

### 9.2.5 Air Converter Adjustment

1. Use an Allen key (4mm) to loosen the locking screw of the pressure transducer (1/49).
2. Use a wrench (17 mm) to unscrew the air converter (1/19) and remove it from the spray gun body.
3. Measure the length of the air converter according to figure 5.

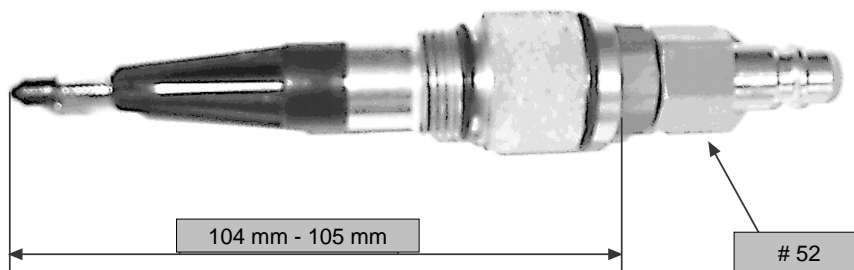


Figure5: Air Converter Length

4. If the measured length does not correspond to the values indicated by the figure, adjust the air converter as follows:
5. Choose a flat-tip screwdriver suitable for the plug-in nipple (1/52) and insert it in the slot of the valve underpart (1/27).
6. Secure the valve head with your fingers or by means of appropriate tongs. When using tongs, ensure that the valve head will not be crushed.
7. Adjust the air converter as required:
  - If you turn the screw driver clockwise, the air converter will become shorter.
  - If you turn the screw driver counterclockwise, the air converter will become longer.
8. Fix the air converter to the spray gun, but still wait to tighten the locking screw for the air converter.
9. Connect the spray gun to the compressed air supply hose pipe.

**Attention!** Ensure that there is no circulation of any coating materials or solvents within the spray gun.

10. Actuate the trigger handle (1/33), the air converter should be triggered after an actuation distance of the handle of 1 - 2 mm.
  - If the air converter is triggered earlier or already during the connection to the compressed air supply, it is too long and must be shortened.
  - If it is triggered too late, however, it is too short and it must be lengthened.
11. Dismount the air converter to adjust the correct length. Now, adjust the required length. Repeat this procedure until the air converter is triggered correctly.

After having ensured the correct triggering and adjustment, tighten the locking screw of the air converter.

## 10 Troubleshooting Table – METACAP Spray Gun D/A

Fault	Cause	Repair
Air flows out of the spray gun immediately after having switched on the compressed air supply.	The air converter is too long or it is stuck.	Adjust/release the air converter.
	The O-ring of the valve underpart is defective.	Replace the O-ring.
No material supply through the nozzle	The nozzle is clogged.	Dismount and clean the nozzle.
	No material pressure	Verify the paint conveying device
Material drops coming out of the nozzle	The nozzle/flare needle is defective.	Replace the nozzle/AKKORD needle.
	Impurities within the nozzle	Clean the nozzle.
	The initial air input has been (unintentionally) altered.	Adjust the initial air input.
	The material pressure is too high.	Reduce the material pressure.
Insufficient spraying results	The nozzle cap is dirty or damaged.	Clean or replace the nozzle cap.
	The nozzle is partially clogged or it is damaged.	Clean or replace the nozzle.
The spray gun is spitting	Irregular material supply	Check the material conveying device and all feeding lines.
	The material has been completely consumed.	Check and refill, if necessary.
Material concentration in the center of the spray beam	Insufficiently atomized material or material which has not been atomized at all due to an excessive material supply.	Verify and adjust the material pressure and the nozzle settings.
Coarse spraying image or just some drops	The viscosity of the material is too high.	Dilute the material accordingly.
	Insufficient spraying qualities of the material	Dilute or change the material, or ask the material manufacturer regarding low pressure spraying.

Fault	Cause	Repair
Formation of dents	The nozzle cap is fastened too tightly.	Loosen the nozzle cap by at least a half turn. There must be an annular gap between the nozzle and the nozzle cap to ensure the atomization process.
Formation of clouds	The air hose pipe is too thin.	Use an air hose pipe with an inner diameter of at least 9 mm.
	The nozzle cap is fastened too tightly.	Loosen the nozzle cap by at least a half turn; there must be an annular gap between the nozzle and the nozzle cap to ensure the build-up of the air jacket.
	coating material layer too thin	increase viscosity
	The spraying pressure is too high.	Reduce the incoming air pressure.
	The silencer ring is clogged.	Clean or replace the ring.
The spray gun is sluggish.	The movable parts run dry.	Lubricate the corresponding component parts.

## **11 Cleaning and Disposal**

### **11.1 Cleaning**

Clean the spray gun thoroughly and remove all coating material residues which then have to be eliminated professionally.



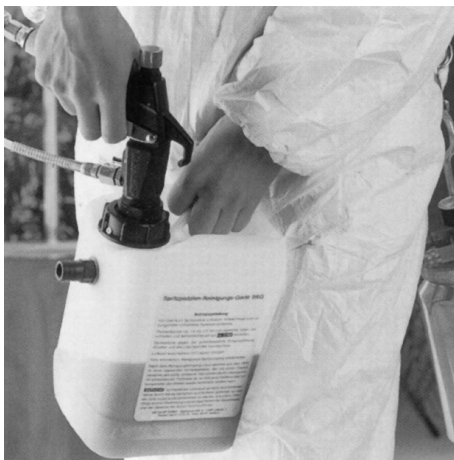
*Figure 6: SRG Spray Gun Cleaning Device*

At the end of each coating and cleaning procedure, there will always be the same questions:

Where to spray the material rest? Where to dispose of the paint and solvent residues? The answer is: Use the SRG spray gun cleaning device!

All materials collected by this container which is equipped with a special orifice for the spray gun head, can be recycled and reused.

Thus, each cleaning procedure corresponds to the current legal regulations regarding the recycling of coating materials, lacquer and solvents or concerning the safe and eco-friendly disposal of these substances.



*Figure 7: Rapid Cleaning of the Paint Spray Gun in the SRG Spray Gun Cleaning Device*

An immediate and rapid cleaning of the paint spray gun in the SRG spray gun cleaning device even if the nozzle is clogged (turn on the nozzle - zoom).



*Figure 8: Cleaning of the SRG Spray Gun Cleaning Device*

The device is emptied by means of the discharge hose pipe (conductive and solvent-proof) into a suitable collecting tank in which the remnants are diluted. Red caps are available for the orifices of the SRG spray gun cleaning device.

## **11.2 Disposal**

Completely disassemble the spray gun and separate the materials. Metals can be reused as old metal if they are free of any coating materials. The components made of synthetic material can be thrown in the garbage can.

It is, however, also possible to send the spray gun back to the manufacturer who will then ensure the correct disposal.

## **12 ATEX**

According to the European directive 94/9/EC "ATEX 95", METACAP – spray gun is not a product in the sense of the 94/9/EC directive because, if used and equipped as intended, there is no danger of inflammation during operation or failure. Therefore, a corresponding marking is omitted.

## 13 EC-Declaration of Conformity

According to Appendix II B of the EC Machinery Directive 98/37/EC

### **METACAP**

#### **Manufacturing of Paint Spraying Devices**

**Siemensstraße 9                      23560 Lübeck**

Phone: +49 (0)451-5820091 Fax: +49 (0)451-581312

We hereby declare that the spray gun

**Manufacture:** METACAP Low Pressure Spray Gun

**Type:** D/A

**Year of manufacture:** 2008

**Accessories:** Option for bottom cup sets item no. 101115A and 101115B

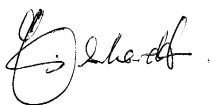
is designed for the installation into another machine/for the assembly with other machine parts or hardware/for the linkage with other machines. The initial operation is prohibited as long as the assembled/completed/interlinked machine is declared as compliant to the EC Machinery Directive and an EC Declaration of Conformity according to Annex II A EC Machinery Directive is at hand.

The spray gun mentioned above can be used in combination with EC-compliant components without any interference with the conformity of the entire equipment.

### **Applied harmonized European Standards**

**EN 1953** Atomising and Spraying Equipment for Coating Materials  
Safety Requirements

Date: 23.06.2009



**Chief Executive Officer**